

**REMARKS**

This Amendment is being filed in response to the final Office Action dated February 23, 2007. In view of these amendments and remarks this application should be allowed and the case passed to issue. No new matter is introduced by this amendment. Support for the claim amendments is found throughout the specification and the claims as originally filed. For example, the amendment to claim 1 is supported by Fig. 5 and the specification at page 17, line 15. New claims 9 and 10 are supported by the specification at page 8, lines 10-20 and Fig. 5. Support for new claim 11 is found in Fig. 5. Originally filed claim 1, Figs. 4 and 5, and the specification at page 12, lines 15-20 provide support for new claim 12. Support for new claim 13 is found in originally filed claim 1, Figs. 4 and 5, and the specification at page 8, lines 10-25. The specification at page 8, lines 10-25 provides support for new claim 14.

Claims 1-14 are pending this application. Claims 1-8 are rejected. Claim 1 has been amended in this response. New claims 9-14 have been added in this response.

***Interview Summary***

Applicants greatly appreciate the courtesy of Examiner Hodge in granting a telephone interview with the undersigned on May 18, 2007. During the interview, amended claim 1 was presented along with new claims 9 and 10. The undersigned and the Examiner discussed where the proposed amendment and new claims were supported in the specification. The undersigned further explained how the proposed amendment distinguished over the cited prior art. The Examiner explained that further consideration would be required upon filing a written response. The Examiner also suggested several additional limitations for Applicants' consideration. The Examiner, however, indicated that because the application was under final rejection, a Request

for Continued Examination would be necessary to have the discussed limitations further considered. Examiner Hodge is thanked for his helpful suggestions.

In view of the telephone interview, new claims 11-14 are additionally presented for the Examiner's consideration.

***Claim Rejections Under 35 U.S.C. § 102***

Claims 1, 4, 5, and 7 were rejected under 35 U.S.C. § 102(b) as being anticipated by Uchino et al. (JP 2002-075455). This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested. The following is a comparison between the invention, as claimed, and the cited prior art.

An aspect of the invention, per claim 1, is a stacked battery (30) comprising an electrode stacked body (7) formed by stacking a sheet electrode (10) and an electrolyte layer (4). The electrode (10) includes a collector (1). The electrolyte layer (4) is placed between the electrodes (10). The collector (1) has an approximately rectangular shape in plane perpendicular to the stacking direction. A packaging material (5a, 5b) houses the electrode stacked body (7). The packaging material (5a, 5b) has an opening which faces the stacking direction of the electrode stacked body (7). The electrodes (10) are placed on outermost layers of the electrode stacked body (7) in such a manner so that the collectors (1a, 1b) are exposed through the opening to an outside of the stacked battery (30) in the stacking direction of the electrode stacked body (7) and function as terminals.

The Examiner asserted that Uchino et al. teach a stacked lithium ion secondary battery comprising sheet electrodes including a collector and a polymer electrolyte positioned between the electrodes which are located on the outermost layers in such a manner that the collectors are exposed to the outside and function as terminals. The Examiner further asserted that the charge

collectors and leads welded to the charge collectors become one piece, and form a unified charge collector.

Uchino et al., however, do not anticipate the claimed stacked battery because Uchino et al. do not disclose the collector having an approximately rectangular shape in a plane perpendicular to a stacking direction and a packaging material housing the electrode stacked body, the packaging material having an opening which faces the stacking direction of the electrode stacked body, wherein the electrodes are placed on outermost layers of the electrode stacked body in such a manner so that the collectors are exposed through the opening to an outside of the stacked battery in the stacking direction of the electrode stacked body and function as terminals, as required by claim 1.

In a conventional stacked battery, as shown in Fig. 1, current flows in the longitudinal direction of each tab (104) when current is drawn outside the battery package (105). In addition, the current flows in the longitudinal direction of the collector (101) in the collectors (101) at both ends of the electrode stacked body (7). This reduces power due to the resistance of the current flow through the tabs (104) and the collectors (101) (see page 2, lines 15-26 of the specification).

The stacked battery of the present invention, however, has a feature that the approximately rectangular-shaped collectors (1a, 1b) themselves are exposed through the opening, which faces the stacking direction of the electrode stacked body, of the laminated sheet (5a,5b) to the outside of the battery (30) in the stacking direction of the electrode stacked body (7), and thereby the collectors (1a, 1b) function as the positive and negative terminals, respectively. Hence, there is no need to attach a tab or the like to the collector (1a, 1b) in order to draw the current outside the battery, thus it is possible to prevent a loss of power due to the resistance of the tab while the current flows through the tab. In addition, current does not flow

along the collectors toward the tabs, and thereby the distance which the current flows is shorter. Hence, the power loss is further reduced (see page 9, line 18 to page 10, line 5).

Uchino et al. disclose a lithium secondary battery which has electric power-generating elements (4) including collectors (15, 16), tabs (7, 9) and a casing (10) (see Figs. 1 and 2). The battery of Uchino et al. has stacked power generating elements (4) housed in a casing (10). The Uchino et al. structure is similar to Fig. 1 of the present specification and suffers from the same power losses. The battery according to the present invention, however, does not need tabs, and therefore, does not suffer from power loss due to the resistance of the tabs.

Further, the unified charge collector of Uchino et al. do not have an approximately rectangular shape, as the tabs (7, 9) project outwards from the surface of the collectors (15, 16) in a direction parallel to the surface of the collectors (15, 16). The present claims are further distinguishable because the batteries of Uchino et al. are connected in series and electrical connectors are required to connect the individual batteries, resulting in additional power losses over the battery module. In the present invention, on the other hand, the collectors function as terminals and the individual batteries can be stacked directly on one another, the positive collector of one battery making direct electrical contact with the negative collector of the immediately adjacent battery. No additional electrical connectors are required between the batteries of the present invention. Thus, power losses in battery modules according to the present invention are further reduced.

The factual determination of lack of novelty under 35 U.S.C. § 102 requires the disclosure in a single reference of each element of a claimed invention. *Helifix Ltd. v. Blok-Lok Ltd.*, 208 F.3d 1339, 54 USPQ2d 1299 (Fed. Cir. 2000); *Electro Medical Systems S.A. v. Cooper Life Sciences, Inc.*, 34 F.3d 1048, 32 USPQ2d 1017 (Fed. Cir. 1994); *Hoover Group, Inc. v.*

*Custom Metalcraft, Inc.*, 66 F.3d 399, 36 USPQ2d 1101 (Fed. Cir. 1995); *Minnesota Mining & Manufacturing Co. v. Johnson & Johnson Orthopaedics, Inc.*, 976 F.2d 1559, 24 USPQ2d 1321 (Fed. Cir. 1992); *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051 (Fed. Cir. 1987). Because Uchino et al. do not disclose the collector having an approximately rectangular shape in a plane perpendicular to a stacking direction and a packaging material housing the electrode stacked body, the packaging material having an opening which faces the stacking direction of the electrode stacked body, wherein the electrodes are placed on outermost layers of the electrode stacked body in such a manner so that the collectors are exposed through the opening to an outside of the stacked battery in the stacking direction of the electrode stacked body and function as terminals, as required by claim 1, Uchino et al. do not anticipate claim 1.

Applicants further submit that Uchino et al. do not suggest the claimed stacked battery.

***Claim Rejections Under 35 U.S.C. § 103***

Claims 2, 3, 6, and 8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Uchino et al. in view of Arias (U.S. Pat. No. 5,618,641). This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested.

The Examiner asserted that Uchino et al. do not disclose the bipolar electrodes or stacked batteries arranged in parallel. The Examiner relied on the teachings of Arias to assert that it would have been obvious provide a stacked battery configuration with bipolar electrodes in order to achieve the desired voltage and current in a more compact structure and to seal the battery to prevent gases from escaping from the battery.

The combination of Uchino et al. and Arias do not suggest the claimed stacked battery because Arias does not cure the deficiencies of Uchino et al. Arias does not suggest the collector

having an approximately rectangular shape in a plane perpendicular to a stacking direction and a packaging material housing the electrode stacked body, the packaging material having an opening which faces the stacking direction of the electrode stacked body, wherein the electrodes are placed on outermost layers of the electrode stacked body in such a manner so that the collectors are exposed through the opening to an outside of the stacked battery in the stacking direction of the electrode stacked body and function as terminals, as required by claim 1.

Applicants submit that new claims 9-14 are allowable over the cited prior art. For example, Uchino et al. and Arias do not suggest the electrodes are placed on outermost layers of the electrode stacked body in such a manner so that the collectors with an approximately rectangular shape are exposed through the approximately rectangular opening which faces the stacking direction of the electrode stacked body to an outside of the stacked battery in the stacking direction of the electrode stacked body and function as terminals, and edges of the approximately rectangular opening are attached to an outer periphery of the approximately rectangular-shaped collector by use of a sealing resin around the edges of the approximately rectangular opening, as required by claim 12; or a packaging material surrounding the electrode stacked body, the packaging material having an approximately rectangular opening which faces the stacking direction of the electrode stacked body, wherein the electrodes are placed on outermost layers of the electrode stacked body in such a manner so that outermost collectors are exposed through the opening to an outside of the stacked battery in the stacking direction of the electrode stacked body and function as terminals, and the packaging material and the outermost collectors together form the housing, wherein the outermost collectors form a substantial portion of the housing facing the stacking direction of the electrode stacked body, as required by claim 13.

**Application No.: 10/664,883**

The dependent claims are allowable for at least the same reasons as the respective independent claims from which they depend and further distinguish the claimed stacked battery.

In view of the above amendments and remarks, Applicants submit that this application should be allowed and the case passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

McDERMOTT WILL & EMERY LLP



Bernard P. Codd  
Registration No. 46,429

600 13<sup>th</sup> Street, N.W.  
Washington, DC 20005-3096  
Phone: 202.756.8000 BPC:MWE  
Facsimile: 202.756.8087  
**Date: May 23, 2007**

**Please recognize our Customer No. 20277  
as our correspondence address.**